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Capital Market Development and Banking Efficiency in Selected Sub-Saharan African Countries

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Abstract:
In Sub-Saharan African economies, low banking efficiency exists alongside rapidly developing but illiquid capital markets. This paper uses three SSA countries as sample and analyzes the linkage of banking efficiency to capital market development across below and above median levels of capital market liquidity. The results of the study show that level of activity in capital market reduces banking efficiency, in association with low capital market liquidity. We conclude that low capital market liquidity has negative effect on how capital market development influences banking efficiency. We recommend that measures towards increasing the liquidity of the capital market are important for capital markets in SSA countries to enhance efficiency of resource allocation via improvement in banking efficiency.

Keywords: *Capital market development, Capital market Liquidity, Banking efficiency, SSA.*
JEL Classifications: E43, C33, O55.

1. Introduction

This study investigates the effect of capital market development on Banking efficiency in some selected Sub-Saharan African (SSA) countries. SSA economies have pursued accelerated stock market development as an approach towards capital market development, as a part of economic reform policies from the 1980s decade with the objective of achieving improved efficiency of resource allocation (Ngugi, Murinde and Green, 2003).However, in SSA countries, the banking sector plays a dominant role in financial intermediation (Beck, Maimbo, Faye, and Triki, 2011), though the data indicates increasing role of the capital market (see section 2). The view that capital market development influences banking efficiency arises in two research fields of which in financial structure theory, the theorists asserts that capital market development has efficiency effects on banks (Song and Thakor, 2010; Bossone and Lee, 2004,) and in studies of bank efficiency, there is evidence that banking system efficiency is influenced by bank equity capital (see for example, Al Shubiri and Jamil, 2017; Ahokpossi, 2013). The implication that banking system efficiency is linked to capital market development raises the linkage an aspect of the role of capital market development in increased efficiency of resource allocation in the bank dominated SSA economies. Thus, information on this linkage is important for evaluating policy choices in financial sector development and design in SSA countries.

The banking lending-deposit spread (also called interest rate spread) is often used as an indicator of banking efficiency. Low banking sector efficiency indicated by the high level of the spread isof policy concern in SSA economies (Ahokpossi, 2013). For example, the banking lending-deposit spread is higher on average for the economies of SSA region than the world average. Specifically, average values for SSA (World) were respectively, 6.7% (4.8%) in the period 1980-1984, 6.6% (5.1%) in 1985-1989; 12.3% (6.3%) in 1995-1999, and 8.7%(6.1%) in 2010-2014. (higher values of the indicator represent lower efficiency). Stock markets have grown rapidly in SSA economies in the post reform era, but these markets are thin and illiquid (Senbet and Otchere, 2008). Capital market Illiquidity is likely to involve a dampening of capital market effect on banking efficiency. In particular, comparative data suggests that the SSA region has a higher average stock market capitalization than the world average, but a lower average market liquidity. However, these observed trends are based on data that are averaged over economies and do not indicate whether differences across countries matter for the observed data.

The research focus of this study bears on the two fields of theoretical financial structure literature and the empirical literature on banking system efficiency. Financial structure literature demonstrates in studies of the linkages between co-existing banks and capital markets that in a bank dominated system, capital market development is interconnected with the banking system. In particular, capital market development influences cost of bank equity (Song and Thakor, 2010, 2011) and provides competition to banks (Deiddah and Fattouh, 2008; Allen and Gale, 1997; Booth and Thakor. 1997; Boyd and Smith, 1996). Bossone, and Lee, (2004) also argue that access to more liquid and efficient capital markets lowers banks costs based on provision of more efficient instruments and of risk

management. This literature emphasis the importance of capital market liquidity on the capital market development's effect on costs of banking capital and lending activity. The empirical evidence supports the importance of effect of capital market development on banking sector, but leaves the importance of capital market development on banking efficiency in particular, largely unsettled. For example, Deiddah and Fattouh (2008), finds that security market development and banking development each positively influences economic growth, but their interaction negatively influenced growth. In addition, while Adelegan, (2009), finds that capital market development positively influences investment efficiency, earlier studies of effects of stock market development, Levine, (1997), Demirguc-Kunt and Maksimovic, (1998), noted that the positive association between higher stock market liquidity and capital formation is a reflection of the effect of the higher liquidity on banking system lending. Furthermore, Mattana and Pannetti (2012) establish an effect albeit negative of security market development on banking liquidity, while Demirguc-Kunt and Levine, (1996) establish that development of the stock market is positively associated with development of intermediaries. Also, Bossone and Lee, (2004) provide theoretical arguments that capital markets informational externalities strengthens the competitiveness of banks. Empirical studies of banking efficiency on the other hand, find important roles for bank capital on banking efficiency, (Al Shubiri and Jamil, 2017; Ahokpossi, 2013). Moreover, these studies show that competition in the banking sector is also a determinant of banking efficiency. Aligning with the above discussion, the research questions of this study are (1) does capital market development have influence on banking system efficiency in SSA economies? (2) Is the measured effect of capital market development on banking system efficiency determined by level of capital market liquidity in SSA economies?

To address the research questions of the study, we employ panel data on three SSA economies, South Africa, Kenya and Nigeria, and employ instrumental variable estimation methodologies, using fixed effect and random effect panel data models. These two panel data specifications permit analyses of the effect of capital market development on banking efficiency using the alternative assumptions that the selected countries are heterogeneous with their economies each exposed to shocks specific to each and alternatively, that the economies exposed to random shocks that cancel out one another. This study is presented in five sections additional to the introductory section. Section Two contains a brief discussion of trends in capital market and banking system development in the three selected SSA countries. Section Three is a review of relevant literature. Section Four is the empirical model while sections five and six are the empirical results and the conclusion and policy recommendations respectively.

2. Capital Market and Banking System Development in the Selected Sub-Saharan African Economies: Nigeria, Kenya and South Africa

The banking and stock market sub-sectors of the financial system as well as the real sector of these three economies, Nigeria, South Africa and Kenya, experienced upward but uneven trends over the period 1980-2014, as indicated by the indicators, banking credit to the private sector as a percentage of Gross Domestic Product (PSC), stock market capitalization as a percentage of GDP (SMK) and Gross Domestic Product per capita (GDPPK). The aggregate data for the three economies (see panel A) suggests higher level of activities in the stock market comparative to the banking sector. In particular, for the entire period under study, 1984 to 2015, the graph shows an increasing level of stock market activity as a percentage of output, but banking sector activity as a percentage of output remained constant. However the levels of activities in each sub-sector differed from one economy to the other, as shown in panels a, b and c of figure 1, where we graphed PSC, SMK and GDPPK for each of the three countries. For example, in Panel a, banking sector activities were initially higher in Nigeria up till 1990s when the reforms policies adopted in the 1980s to 1990s led to expansion of activities in the stock market. However, when the stock market began to experience expansion in activities, the level of banking sector activities initially remained constant, but from 2004, the two sectors appeared to be growing together. It is noteworthy that in response to the bank re-capitalization policy of 2004, the Nigerian banking sector had to resort to the capital market for equity capital.

Similarly, to the trend displayed by the Nigeria financial sectors, in Panel B, Kenya's banking sector and stock market, have each maintained upward trends in activities. However, the expansion of the stock market does not appear to be strongly associated with banking activity levels. In the case of South Africa, stock market showed higher activity level than the banks through the whole period studied. While the stock market displayed a markedly upward trend, banking showed no similar tendency.

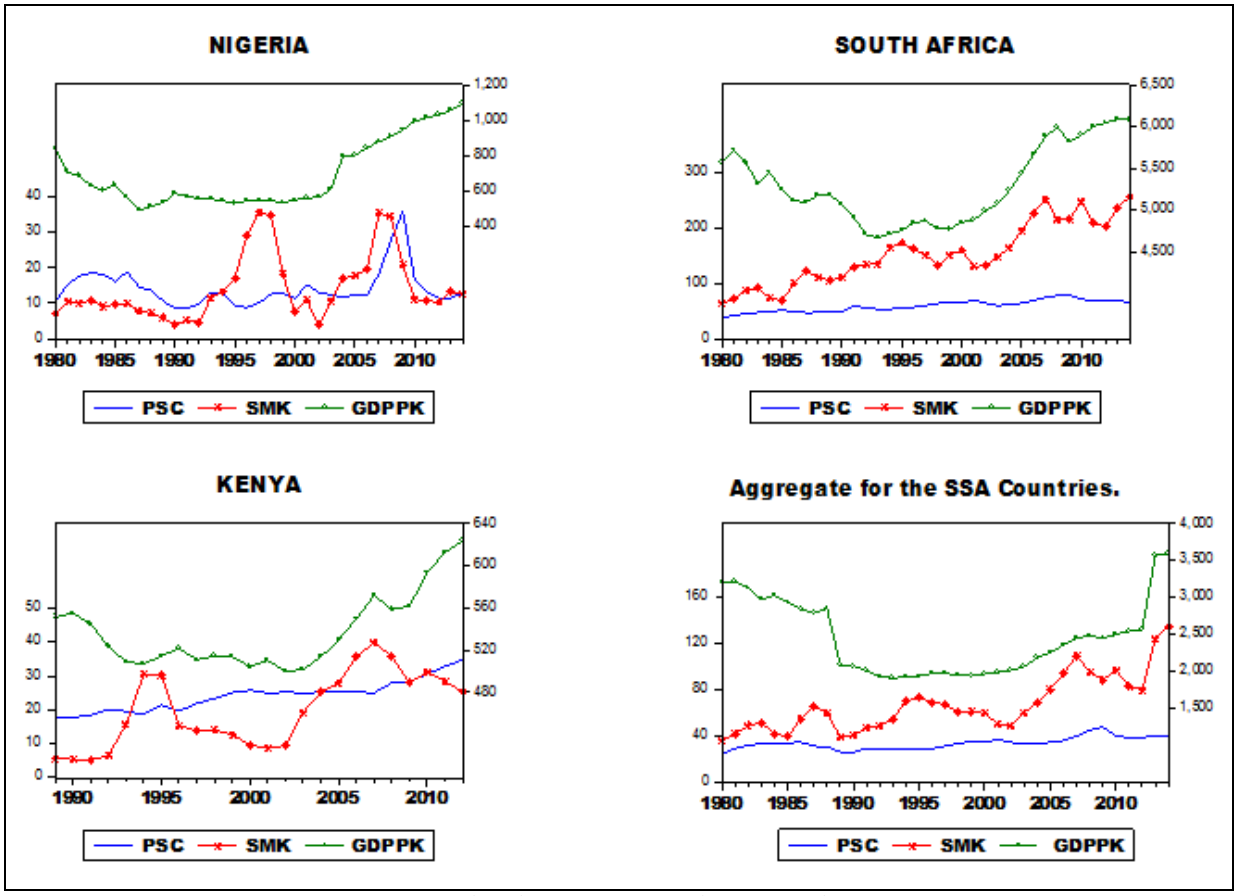

Figure 1: Financial and Economic Development Indicators in SSA
Source: Graphed by author, underlying data sourced from World Bank Financial Sector Development indicators, Central Bank of Nigeria Statistical Bulletin, and South African Reserve Bank

In South Africa, panel C, there is a constant level of activities as depicted by the rather flat line showing PSC for the economy over the entire period. This occurs in association with an increasing level of stock market activity. This may imply that growing stock market activities compete with expansion of the banking sector. Evidently, the notable evidence from the information in the graphs in figure 1 is that the proposition that the development of the banking and stock market sectors are interconnected may be valid for these economies. On the other hand, a key feature displayed in these graphs is the observation of fallin GDP per capita, GDPPK, over the 1980s to 1990s decade, and the pick from the mid-1990s. However, strong co-movement with particularly, stock market development is only observed from the mid-1990s decade.

3. A Review of Relevant Literature.

The theoretical financial structure studies alternatively presents arguments of competitive effects of capital market on the banking sector, and of a complementary effect, where securities market development will provide competition to the banking system in a bank dominated system in the sense that increased activities of the capital market will be associated with reduced activities in banking system. For example, these authors' suggest that development of markets will provide competition for banks via competitive provision of the same financial functions such as credit allocation (Deidda and Fattouh, 2008), ameliorating information asymmetry problems (Boot and Thakor, 1997) offering insurance against idiosyncratic risks and providing information on investment opportunities Mattana and Pannetti (2012). However, the predictions of competition between capital market and banking system suggest that banks have incentives to be more efficient (DMD, 2007; Boosone and Lee, 2004). In particular, in studies of banking efficiency increased competition is stated to be important for lowering banking interest rate spreads.

Moreover, Song and Thakor (2011) and Boot and Thakor, (1998) predict complementarity between banks and capital markets, based on banks accessing capital at lower costs in highly liquid capital markets and also provide support for the key argument that capital market development influences banking sector's efficiency. For example, banks ameliorate pressure from solvency and regulation on lending by accessing additional capital to meet regulatory requirements or indicate their solvency (Ahokpossi, 2013). Lower cost of equity capital is a potential driver of how costs of additional bank capital transmits into the interest rate charged on loans to bank borrowers. The role of government regulation or intervention in financial markets adds another dimension to the effects of capital market development on banking system efficiency. Boyd and Smith (1996) and Song and Thakor (2011) suggest that positive efficiencies may not develop in the banking system in association with capital market development if there is high government intervention in the financial system.

The empirical evidence on the influence of capital market development on the banking system in studies of banking efficiency including Al Shubiri and Jamil (2017), Sheriff and Amaoko (2014), Ahokpossi (2013) commonly examine the effect of a list of variables which can be grouped broadly into bank-specific factors (credit risk, liquidity risk, bank equity and competition); and macroeconomic conditions (economic growth, unemployment, inflation) and regulations (monetary policy and banking regulation). The literature generally tends to find important roles for these variables as factors in efficiency of the banking system. However, this literature fails to account for the predictions of the financial structure literature about the direct role of capital market development in banking efficiency.

Studies that focus on the interrelationship between banking and capital market developments include Mattana and Pannetti (2012), Odhiambo (2010) as well as Demirguc-Kunt and Levine (1996). Mattana and Pannetti's (2012) study contribute to the empirical literature, a negative effect of the index of security market on bank liquidity ratio. Specifically, a unit increase in the security market index caused a 21.8% decrease in bank liquidity ratio. Odhiambo (2010) examined the relationship between bank and stock market development in South Africa using annual data for 1969-2008. The study employed the ARDL-Bounds test approach to cointegration. The results of the study in contrast to Mattana and Pannetti (2012), support positive effect of banking development on stock market development. Demirguc-Kunt and Levine (1996), examined effect of stock market capitalization ratioand stock liquidity ratio on measures of a broad classification of financial intermediary including both banks and non-bank financial intermediaries in 44 developing and industrial countries over the period 1986 to 1993, using simple correlation analysis. The result from the correlation analysis showed positive correlation between stock market development indicators and both banks and non-banks excepting pension and insurance companies, but the empirical analysis does not examine causative effects.

4. Empirical Methodology

This section presents a discussion of data in section 4.1, panel data analysis is discussed in Section 4.2 and the empirical model and estimation methodology in section 4.3.

4.1. Data

We employ panel data on the three SSA economies Kenya, Nigeria and South Africa over the period 1980 to 2014 contingent however, on availability of data. We follow previous studies (Al Shubiri and Jamil, 2017; Petkovski and Kjosevski, 2014; Ahokpossi, 2013) and use bank lending-deposit spread (BLS_{it}) as the banking efficiency variable. We describe capital market development $(SMK_{it})_{based}$ on stock market activity and we measure this using stock market capitalization. We also include in the model, the gross domestic product per capita ($GDPPK_{it}$) as our control variable to account for financial architecture theoretic that the evolution of banks and capital markets in an economy are endogenous to the process of economic development (Song and Thakor, 2010; Boyd and Smith, 1998; Booth and Thakor, 1996, 1998). All data are in percentages, BLS_{it} is the difference between the lending and deposit interest rates of banks, Stock market capitalization (SMK_{it}) and Value traded (VT_{it}) are measured as percentages of GDP. We obtained data on BLS_{it}, SMK_{it}, $GDPPK_{it}$ and VT_{it} in annual frequency from the World Bank Data Base (2015), the South African Reserve Bank, and Central Bank of Nigeria (CBN).

4.2. Panel Data Analysis

Using panel data rather than time series or cross-sectional data yields a number of advantages, including amelioration of the econometric problem of effects of unobserved variables which are correlated with the explanatory variables that in turn leads to unreliable estimates of relationships. According to Hsiao (1999), the panel data is able to control for unobserved variables because panel data structure gives information on both the intertemporal dynamics and the individuality of the cross sections under investigation. The panel data analysis is conducted using both the fixed effects and random effects models. These models are used to address the problem of heterogeneity bias in panel data analysis. This problem arises from country or time specific effects in the observed relationship for individual countries, which implies that estimated coefficients actually vary across countries, and therefore renders the estimates over the panel data without meaning. Time and country fixed effects may exist arising from differences over time and between these economies in shocks experienced. The fixed effects model addresses time fixed and/or country fixed effects by using a country specific intercept that is allowed to vary across the countries, while the slope coefficients are assumed constant over individual country. The random effects model on the other assumes that the slope coefficients vary across countries.

4.3. Empirical Model of Banking Efficiency

We specify the empirical model of effects of capital market development on banking efficiency in terms of a functional dependence of banking lending-deposit interest spread (BLS_{it}) on stock market capitalization (SMK_{it}) and economic development ($GDPPK_{it}$). The functional relationship is specified using both the fixed effects and random effects approaches and are given as follows,

1). $BlS_{it} = \alpha_i + \alpha_1 SMK_{it} + \alpha_2 GDPPK_{it} + u_{it} + v_{it}$

2). $BlS_{it} = \alpha + \alpha i_1 SMK_{it} + \alpha i_2 GDPPK_{it} + \varepsilon_{it+\epsilon it}$

Where, i = 1, 2, …, N and t = 1, 2,…, T

N is number of countries and T is number of observation per country.

α_i in (1) is the country specific intercept term and α_1, α_2 are the slope parameters which are constant across countries. In (2), αi_1, αi_2 are the slope parameters which vary across individual countries. The terms u_{it}in (1) and ε_{it} in (2) are respectively the fixed effect component of the error term and the random effect component of the error term. Also, v_{it} in (1) and ϵ_{it} in (2) are respectively, the idiosyncratic error terms.

In (2), the estimated slope coefficients are obtained as,

$$BLS_{it} = \alpha + \sum_{i=1}^{N} \alpha_{i1} SMK_{it} + \sum_{i=1}^{N} \alpha_{i2} GDPPK_{it} + \sum_{i=1}^{N} \epsilon_{it}$$

The estimated coefficients in the two versions of the model in (1) and (2) may be biased due to the problems of endogeneity and simultaneous determination of contemporaneous measures of capital market development and economic development by banking efficiency. We therefore estimate the equations using instrumental variables estimation techniques. We use the lagged values of SMK_{it} and $GDPPK_{it}$ as well as banking credit to the private sector (PSC_{it}) as the instruments to capture the predetermined components of the right-hand side variables. This method also accounts for the effects of omitted important explanatory variables which are indicated to be determinants of the bank lending-deposit spread.

5. Empirical Results

The study used an unequal panel data as data was only available on all the variables of the model form 1991 to 2012 for Kenya.

5.1. Preliminary Analysis of Data

Variable	Mean	Std. Dev.	Min	Max	Observations
BLS (KN)	10.95974	2.634553	7.05307	16.1958	22
BLS (NG)	6.012019	2.884807	.316667	11.0642	35
BLS (SA)	4.082643	1.093953	1.70833	6.33333	35
SMK (KN)	21.26534	10.64073	5.146677	39.96196	22
SMK (NG)	14.23311	9.25379	3.918486	35.83591	35
SMK (SA)	152.1084	55.78939	63.99907	256.4981	35
PSC (KN)	24.76147	4.377249	18.33043	34.80964	22
PSC (NG)	14.20697	5.394564	8.554628	36.00986	35
PSC (SA)	58.88845	10.43735	37.96836	77.842	35
VT (KN)	1.193653	1.142484	.119429	4.092492	22
VT (NG)	1.128657	1.89071	.024623	8.64703	35
VT (SA)	28.53219	25.42236	2.710124	75.47338	35
TR (KN)	5.257571	3.207802	1.335486	14.78455	22
TR(NG)	6.0025	6.805578	.207545	29.40228	35
TR (SA)	17.08254	11.90755	2.920102	35.36999	35
GDPPK (KN)	536.1717	36.68902	500.246	624.009	22
GDPPK (NG)	699.1849	188.6639	494.239	1098.04	35
GDPPK (SA)	5302.592	467.9706	4668.27	6090.3	35

Table 1: Summary Statistics
Source: Author's computation.

A number of key features characterize the data on the variables as shown in Table 1. For all the three countries, all the variables have non-zero means, and they are generally positive. Furthermore, across all variables, the general observation is that the values tend to indicate close levels of banking efficiency and capital market development for Nigeria and Kenya but a higher level for South Africa. Specifically, based on the calculated means BLS_{it} differs over the three economies, but is lowest for South Africa at 4.08 and highest for Kenya at 10.96 and is 6.01 for Nigeria. Furthermore, SMK_{it} is highest for South Africa and Lowest for Nigeria. Similarly, VT_{it} is highest for South Africa and Lowest for Nigeria, but TR_{it} is highest for South Africa and is lowest for Kenya suggesting that Nigeria's Stock market is more active than that of Kenya. The data implies significant variation in the characteristics of the bank efficiency and capital market development between the three economies and suggests that the economies are heterogeneous.

5.2. Presentation and Analysis of Estimated Results

We initially estimate the fixed and random effects specifications of the banking efficiency model in (1) and (2) for the whole sample but add capital market liquidity (VT_{it})among the explanatory variables. This approach enables us to test for both effects of SMK_{it} and $GDPPK_{it}$ as well as a direct effect of VT_{it} on banking efficiency. The estimated results (Table 2) show that based on the fixed effects specification, column (ii), the intercept and the coefficients on SMK_{it}

Dependent Variable				
(i). variables	(ii). BLS(1)	(iii). . BLS(2)	(iv). BLS(1)	(v). BLS(2)
SMK	0.0714 (0.0377) [1.89].	-0.4711 (0.79) [-0.6]	0.03087788 (2.0e-02) [1.5].	-0.07500 (5.5e-02) [-1.4]
VT	-0.19087514 (9.2e-02) [-2.1]	1.1331102 (1.9) [0.61]		
TR			-0.19045488 (9.3e-02) [-2.00]	0.4552 (0.28) [1.60).1088
GDPPK	0.00134509 (1.5e-030 [0.95]	0.00592084 (1.2e-02) [0.51]	-0.00005678 (1.2e-03) [-4.7e-02]	0.00020 (9.7e-02) [0.2]
c	0.56136228 (4.2) [0.14]	11.622079 (5.2) [2.2]	6.4492378 (2.6) [2.5}	6.6250 (1.4) [4.7]
R^{-2}	0.27	0.0050	0.0050	0.1232
FE/RE	9.099	4.612e-07	4.3138	2.433e-07
F(2, 83) {P>F}	17.88 {0.0000}		15.27 {0.0000}	
chi2	484.87131	3.3468904	0.1278476.54467	23.05371
p>chi2	0.0000	0 .34121	0.0000	0.0000
obs	89	89	89	89

Table 2: Instrumental Variables Estimates of the Fixed and Random Effects Specifications of the Bank efficiency Model

Notes: (1). Source: author's computation using STATA 12 software. (2). Figure in parenthesis are standard errors and t-values are in brackets. (3). FE/RE = estimated fixed effect/ random effect error components in the fixed effect/random effect specifications respectively. and $GDPPK_{it}$ are positive while that of VT_{it} is negative. Furthermore, based on the estimated t-values, the estimated coefficient on VT_{it} with a t-value of -2.1 is statistically significant at the five percent level of significance, while SMK_{it} is statistically significant at the ten percent level and $GDPPK_{it}$ is statistically insignificant at any conventional level of statistical significance. The implication of these results is that capital market development measured by level of activity increases bank lending spread, a finding in contrast with the implications of positive effect of capital market development on banking development in the financial structure theory (Song and Thakor, 2010, 2011; Boot and Thakor, 1998; Boosone and Lee, 2004). Moreover, the finding that liquidity of the market reduces bank lending spread, is in accordance with these arguments. The R^{-2} shows that this specification explains only 27 percent of the variation in Banking lending spread. Furthermore, we conduct model diagnostics based on the estimated fixed effect component of the error term (FE) of 9.099, which we evaluate using the Wald-test Chi-square statistic, and the F-statistic. The calculated Chi-square values of 484.87 is highly statistically significant based on the *p*-value of 0.0000, show rejection of the null hypothesis that fixed effects do not account for variation in the relationship across the SSA countries. Moreover, the calculated F-stat of 17.88 with a *p*-value of 0.0000 shows rejection of the hypothesis that fixed effects are statistically insignificant for the SSA countries. The model diagnostics therefore indicate the validity of the fixed effects specification.

Based on the random effects specification column (iii), the estimated Chi-squared value of about 3.35 with probability value of 0.3412 indicates acceptance of the assumption that the estimated random effects (RE) component of the error term have no effects on the explanatory variables. Thus we conclude that this specification of the model is not valid. This finding is in accordance with the information of country heterogeneity indicated by the data analysis in section 5.1.We conduct a test of robustness of these findings, by using an alternative measure of capital market liquidity, that is the market Turnover ratio, (TR_{it}). The estimated results (columns (iii) and (iv)) show no significant difference in the findings except that the coefficient on $GDPPK_{it}$ was statistically significant. We therefore continue the analysis using Vt_{it}.

Furthermore, we present the results from the analysis of the model for the below median and above median levels of VT_{it} respectively in Table3.

Dependent variable = BLS						
A.Fixed Effect Model				B. Random Effect Model		
VariableVT<medianVT>median				VT<medianVT>median		
SMK0.1484	-0 .0002			0.1575502	0.0013236	
(0.0675)(0 .0046)				(0.0687)	(0.0045)	
([2.20][-0.05]				(2.29)	[0.30]	
GDPPK0.00394-0.00087				-0.00167361		-0.0007208
(0 .0029)]	(0.0005)			(0.0036)		(0 .0002)
(1.37)	[-1.72]			[-0.47]		[-4.55]
c 3.68038.4778				7.0048489		7.6795818
(2.089)(1.841)				[2.5892736]		(0 .4309)
[1.76)	[4.60])			(2.71)	[17.82]	
R^{-2} 0.07410.5617				0.1259		0.5629
FE/RE	4.1044	1.435.2		0	3.159e-06	
F-Stat{P>F}	30.27{0.0000}	8.51{0.0000}				
chi2	389.85905.29			0.2215247		20.681584
p>chi2	0.0000	0.0000		0.8952		0.0000
Obs.	44	45		44		45

Table 3: Instrumental Variables Estimates of the Fixed and Random Effects Specifications of the Bank Efficiency Model for below median and Above Median Values of Capital Market Liquidity (VT_{it})

Notes: (1). Source: author's computation using STATA 12 software. (2). Figure in parenthesis are standard errors, t-values are in brackets. (3). FE/RE = estimated fixed effect/ random effect error components in the fixed effect/random effect specifications respectively.

For below median values of VT_{it}, the results in Table 3 (panel A) reveal positive estimated coefficients on SMK_{it} and $GDPPK_{it,}$ but only the intercept term and the coefficient on SMK_{it} are statistically significant at the five and ten percent levels respectively. However, theestimated model only explains about 7.5 percent of the variation in BLSit. For above median values of VT_{it}, the coefficients on SMK_{it} and $GDPPK_{it}$ are negative indicating that each has a negative effect on BLS_{it} but only $GDPPK_{it}$ is statistically significant at the ten percent level. Furthermore, model diagnostics based on the calculated Wald-test Chi-square values of 389.85 and 905.29 indicates rejection of the null that for the below median and above median VT_{it}, the estimated fixed effects of 4.1 and 1.4 respectively do not account for variation in the relationships in each country. We therefore also conclude that the fixed effect model is valid. The finding that capital market development increases banking lending-deposit spread at below median values of capital market liquidity but has no important effect at the above median values of the capital market liquidity is in accordance with findings of Deiddah and Fattouh(2008), Mannata and Panneti, (2012) and the argument of Ahokpossi (2014), and confirms the emphasis on high market liquidity for a positive effect of capital market development on banking development in financial structure theory (Song and Thakor, 2010). However, the estimated results at the above median value may further indicate the inadequacy of level of capital market liquidity in these economies.

In contrast, the random effects model for the below median values of VT_{it},is not valid based on the statistically insignificant Wald-test chi-squared statistic. But for the above median values of VT_{it}, the random effect specification is shown to be valid based on the calculated chi-square value of 20.681 with a probability value of 0.0000. We attribute the relevance of this specification at the above median values of VT_{it} to the fact that South Africa's data dominates the variables' data at the above median range of values of VT_{it} (see Table 4) However, the estimated coefficient on $GDPPK_{it}$ is negative and highly statistically significant. The implication is that economic development increases banking efficiency in above median VT_{it}, SSA economies.

Below Median VT_{it}				Above Median VT_{it}			
grp |	BLS_{it}	$GDPPK_y$	SMK_{it}	grp |	BLS_{it}	$GDPPK_{it}$	SMK_{it}
KN |	16	16	16	KN |	6	6	6
NG |	30	30	30	NG |	5	5	5
				SA |	35	35	35
Total |	46	46	46	Total |	46	46	46

Table 4: No of Observation on BLS_{it} SMK_{it}, $GDPPK_{it}$ by SSA Country for The Above and Below Median VT_{it}. Source: author's computation using STATA 12 software.

(Table 4.shows the number of observations per country (grp). The two-key information from the distribution of the data observations across the three SSA countries are that, first, the data on the variables for Kenya and Nigeria account 100% for the range of data corresponding to the below median values of VT_{it}, but account for just about 30% of the data on the variables corresponding to the above the median values of VT_{it}. Two, data on the variables for the South African economy, accounts for about 70% of the data corresponding to the above median values of VT_{it}. The implications are that the data for below and above median VT_{it} may not have the same degree of heterogeneity characteristics)

6. Conclusions and Policy Implications

The study asked whether capital market development influences banking system efficiency, and whether level of liquidity of the capital market is important for this relationship in SSA countries. We pursued these questions by identifying banking lending-deposit spreads linkage with level of market activity, for below median and above median levels of the indicator of capital market liquidity, using panel data instrumental variables regression methods. Based on the findings of the study, we conclude that level of capital market activity contributes negatively to banking efficiency and that these effect is determined by low capital market liquidity. we recommend that measures aimed at increasing liquidity of the capital market would enhance the contribution of the capital market to banking efficiency and thus to the capital market development objective of increased efficiency of resource allocation by the financial system in these SSA economies.

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